REMARKS

Claims 1-22 are pending. Claims 11-13 and 15-22 are withdrawn from consideration. Applicants respectfully request rejoinder of the withdrawn claims under 37 C.F.R. § 1.141 upon allowance of generic claims 1-7. Claims 1-7 have been rejected and claims 4, 8-10 and 14 have been objected to. Applicants respectfully request reconsideration and withdrawal of all of the rejections.

By this Amendment, the Specification and claims 1, 3-4, 8-9 and 14 are amended. Support for the amendments can be found in the specification and in the claims as originally filed. Claims 1 and 3 are amended to correct a grammatical error. No new matter has been added.

The specification was objected to for asserted informalities. The Specification has been amended to obviate this objection. Thus, Applicants respectfully request withdrawal of the objection to the specification.

Claim 4 was objected to for asserted informalities. Claim 4 has been amended to obviate this objection. Thus, Applicants respectfully request withdrawal of the objection to claim 4.

Claims 1-4, 6 and 7 were rejected under 35 U.S.C § 102(b) as being anticipated by Morton et al. (U.S. Patent No. 5,376,312). Applicants respectfully traverse this rejection.

Applicants respectfully submit that the present invention provides a humidifier which has a modified geometry to reduce pneumatic resistance and has a multi-passage structure to uniformly arrange humidifying nozzles in an air flowing duct so that the absorption length can be shortened by improved mixing, thereby enhancing the

humidification capability and enabling the humidifying tubes to be replaced (Specification, page 3, lines 3-11).

To accomplish these advantages, the invention of present claims 1-4, 6-7 and 23-26 is directed to a thimble-type steam injection humidifier in a high response humidification system, the steam injection humidifier comprising: a number of humidifying tubes structured of multi-passage modules, wherein flexibility of application can be enhanced according to humidifying capacity required for the high response humidification system; headers arranged upstream and downstream of the humidifying tubes; and detachable fastening means for fastening the humidifying tubes with the upstream and downstream headers, wherein the passages can be opened/shut according to humidifying capacity (claim 1).

Morton et al. disclose a "steam injection humidifier" (Morton et al., column 2, line 25) comprising a "plurality of elongate tubes" (Morton et al., column 5, line 35), where "each of the tubes (32) are connected at a first end portion (42) with a supply header (28) and at a second end portion to a return header (34)" (Morton et al., column 5, lines 41-43 and Figure 2), and a "quick disconnect arrangement (136) between supply header (122) and a first inlet end (134) of a steam dispersion tube (130)"(Morton et al., column 8, lines 51-53 and Figure 11).

Applicants respectfully submit that claim 1 is not anticipated by the disclosure of Morton et al. Anticipation requires that all of the claim limitations be present in the cited prior art reference. Applicants respectfully submit that there is no teaching or

suggestion as to the ability to open and shut the passages according to humidifying capacity (as shown in Figures 6A and 6B of the present invention).

Applicants note that the ability to shut the passages and thereby adjust the steam capacity by changing the number of passages in use distinguishes the present invention from Morton et al. This ability to shut the passages enables load adjustment through humidification load fluctuation to enhance flexibility of application of the present invention (Specification, page 14, lines 5-10 and page 20, lines 4-22). This ability also has the advantage that exhaustion of condensate is made easier without degrading humidifying efficiency or capacity of injected steam.

Further, Applicants note that comparing the present invention with Figure 17 of Morton et al. that the limitation of claim 1 to a thimble-type steam injection humidifier is taught or suggested. This limitation is important as this provides increased uniformity of the steam state as the non-uniformity within each thimble-type humidifying tube can be compensated due to cooling by the ambient air (Specification, page 9, lines 3-11).

Claims 2-3 and 6-7 are dependent on claim 1, thus these claims are not anticipated by Morton et al. for at least the same reasons discussed above for claim 1.

Next, Applicants respectfully submit that while Morton et al. disclose the use of steam nozzles with holes (bores) at the outlet end (Morton et al., Figures 13 and 14), Morton et al. do not disclose tapering the bores, much less at an angle within the range of claim 4 of the presently claimed invention.

Instead Morton et al. disclose positioning the nozzles themselves, such that the bores therein are substantially aligned along a plane or positioned at an acute angle

with respect to the plane (Morton et al., column 6, lines 47-39). Thus, Morton et al. only refer to nozzles each having a bore therein for conducting steam from the tube into an air stream and no tapering angle of the bore is taught or suggested, much less at an angle within the range of claim 4 of the presently claimed invention (Morton et al., column 2, lines 60-63). As such, Applicants respectfully submit that claim 4 is not anticipated by the disclosure of Morton et al.

Further, Applicants note that the present invention discloses a thimble-type humidifier where the steam passage has a thimble-type meandering structure. Thus, superheated steam of an outer tube can heat an ejecting steam tube as an inner tube and eject steam. This allows for constant maintenance of the temperature of the ejected steam and decreased external air resistance.

In contrast, Morton et al. discloses an outer tube that acts as dead-air space and decreases air resistance while obtaining adiabatic function. Although Morton et al. allows the steam to flow in the inner tube, there is nothing flowing in the dead-air space. As such, the outer tube functions as an air pocket using low heat conductivity of air so as to suppress heat transfer between the external flowing air and the steam.

Thus, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. § 102(b).

Claim 5 is rejected under 35 U.S.C. § 103(a) as obvious over Morton et al. Applicants respectfully traverse this rejection.

Applicants respectfully submit that the above arguments distinguishing claim 1 over Morton et al. are relevant to overcome this rejection.

In present claim 5, the injection nozzles are "a pressed pin type nozzle" or "a screw type nozzle." Applicants respectfully submit that the current recitation of "type" of nozzles does not suggest that the nozzle types were known within the art prior to Applicant's invention.

Morton et al. disclose two alternative nozzles, the variations of which include a tapered (194) and non-tapered flange (186) of width (D) that allows the nozzle to be "precisely" positioned against the surface of the steam dispersion tube (130) (Morton et al., column 10, lines 39-54, and Figures 13 and 14). Morton et al. do not teach or suggest the pressed pin type nozzles or screw type nozzles of claim 5.

Applicants respectfully submit that "pressed pin type nozzles" or "screw type nozzles" of present claim 5 were not known to those of skill in the art. Thus, Applicants respectfully submit that it would not have been obvious for those of skill in the art to modify the nozzle types of Morton et al. to that of a pressed pin or screw type nozzle. Further, Applicants agree with the Examiner that Morton et al. do not disclose the means for connecting the nozzle means to the humidifying means (Office Action, page 4, lines 2-3).

Thus, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

In view of the above remarks, Applicants respectfully submit that this application is in condition for allowance and request favorable action thereon.

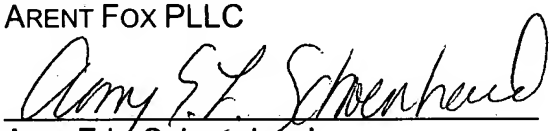
In the event this paper is not considered to be timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for this extension, together with

any additional fees that may be due with respect to this paper, may be charged to our Deposit Account No. 01-2300, referencing Attorney Docket No. 101190-00025.

The Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment associated with this communication to Deposit Account No. 01-2300, referencing Attorney Docket No. 101190-00025.

Respectfully submitted,

ARENT FOX PLLC



Amy E.L. Schoenhard
Registration No.: 46,512

Customer No.: **004372**
ARENT FOX PLLC
1050 Connecticut Avenue, N.W., Suite 400
Washington, D.C. 20036-5339
Tel.: 202-857-6000
Fax: 202-638-4810

Enclosures: Petition for Extension of Time (3 months)